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SEPARATELY BOUND SPECIAL SUPPLEMENT

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—Francis A. Cartier

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FUTURE DIRECTIONS IN COMMUNICATION RESEARCH: AN ASSESSMENT OF THE POSSIBLE USE OF ANALOGUES*

ELWOOD MURRAY**

Future communication research quite properly will proceed in many directions and assume a number of forms, and the writer does not wish anyone to construe this article as a claim that analogues are the only fruitful device for formulating hypotheses. He does believe, however, that investigators have not in the past given sufficient attention to the use of analogues and that they will in the future make greater use of them.

The purposes of this article are as follows: (1) to use the human nervous system to exemplify the possibilities of the analogue approach to the study of communication; (2) to consider briefly the combination of two or more disciplines as a means of utilizing known fact-structures in other areas as cues to the nature of the communication processes; (3) to comment upon possible future contributions which analogue approaches might initiate.

THE HUMAN NERVOUS SYSTEM AS A COMMUNICATION MODEL

Models, which are only very careful analogies, are useful for the discovery of hypotheses and not for the verification of theories. Although all analogies are "false," including those we are going to use here, some are less so than others. Moreover, even though analogies may become dangerous when attempts are made to apply them in detail, they may illuminate unknown orders of relationships sufficiently to permit the right questions to be asked and in turn to permit the formulation of hypotheses to be tested. Experience in related areas where the relationships are known seems to be the only basis that we have for exploring and describing some of the darker corners of the caverns of communication processes and behaviors.

The model which will be explored here as a means of exem-

* Starred articles are those which are part of the series commemorating the decennial which the NSSC celebrated in 1960. Most of these papers assess the developments of the last ten years, but a few, including this one, use our present knowledge as a basis for looking forward.

** Dr. Murray is Director of the School of Speech, University of Denver. He was president of the NSSC during 1952. He was a founder of this organization in November, 1949.

plifying the analogue approach is that of the human nervous system and brain. What illumination will this model throw upon the direction which research in communication can take in the next decade? First, the model used here may be helpful in dealing with our problem of communicating about our communicating—a difficulty which exists in all fields of research. Robert Oppenheimer says: "For example, in my opinion, it is almost impossible to explain what the fundamental principle of relativity is about, and this is even more true of the quantum theory. It is only possible to use analogies to evoke some sense of understanding."[1]

In making such comparisons it is immediately apparent that the relationships are literal in some senses and figurative in others. In medicine the communication system is confined to the order of relationships in the human body, in which many systems and subsystems of cells and organs must be kept functioning as a unit if there is to be health. Communication practitioners work in a different but paralleling order of relationships and within and among organizations, audiences, institutions, societies, and other group entities. In the main the functions of communication in human groups and societies parallel those of the human nervous system which bring the body into better "adjustment" with itself and with the environments with which it must cope. The function of communication in groups is exactly the same. If the work of orators, salesmen, editors, musicians, and novelists does not eventuate in better adjustments of persons within groups to their environments, there is need for new leadership and statesmanship, indeed; there is need for a new "doctor" who can bring "therapy" to his groups.

Says Robert Oppenheimer: ". . . generally the new things we have learned in science and specifically in atomic physics do provide us with valid and relevant and greatly needed analogies to human problems lying outside the present domain of science or its present borderlands. . . . Analogy, often of great depth and scope, in which views have been created or substantiated in some scientific enterprise are similar to those which might be held with regard to metaphysical, political, and ethical

[1] "The Tree of Knowledge," *Harper's Magazine,* CCXVII (Oct., 1958), 57.

problems."[2] This insight comes about in that every deep analogy, closely attended to, gives a new frame of reference or viewpoint for the communicator to plan research upon his problem. The analogy also may give him clues as to the sort of solution required. Each comparison thus brings another focus for abstracting and perceiving; a working back and forth takes place in the comparing of different orders of relationships.

An obvious feature is that the hierarchy of systems and subsystems in a great corporation is comparable to the systems of control in the brain and body. The *line* and *staff* has an equivalent in principle. The functioning of the board of directors, president, superintendent of manufacturing, department heads, supervisors, foremen, and workers are paralleled by the cerebrum, cerebellum, many coordinating centers, organs, and cell assemblies; and the varied feedback arrangements in a company are analogous to the marvelously effective homeostatic controls of such things as digestion, blood circulation, temperature. Both of these "networks" have limited means for self-repair, restoration, growth, and reproduction.

The formal *lines* of a corporation carry the policies of the enterprise into action just as the entire autonomic nervous system does for the individual, except that the latter has far greater flexibility and potential in the "adjustments" which are possible than does the former. The *staff* services the whole enterprise as does the sympathetic nervous system the whole person.

More specifically, an examination of the pathologies and the breakdowns in the human body suggests numerous analogies in intragroup and intergroup relationships. The disorders in the communication systems of human bodies are comparable in many ways to the disorders in great corporations, in political and military organizations, and indeed in all social groups. Just as physicians deal with several thousand types of disabilities, so do managers, executives, political rulers, and other leaders face perhaps as many corresponding disabilities in their enterprises. Does it not seem likely—and this is the pertinent question—that the methods of diagnosis and treatment which succeed in medicine can lead to hypotheses worth testing in various fields which have communication problems comparable to those in the human body?

[2] *Science and the Common Understanding* (New York: Simon and Schuster, 1954), p. 8.

Even figurative analogies may lead to possible solutions; in fact, since forming them requires greater creativity than does the locating of literal relationships, they are particularly likely to lead to imaginative suggested procedures. Among the possible figurative comparisons between the body and a communication system are those dealing with allergies. Persons who are "allergic" to one another cause trouble (such as a "fever") in the enterprise. The overactivity of a nerve to the stomach which results in an ulcer may be paralleled to the dictatorial attitude of a boss toward someone in his department. Failure of homeostasis in regard to breathing and circulation is like the failure of checks and balances in our governments. The checks and balances in an institution are part of its communication system according to Jurgen Ruesch.[3]

Sensory or motor aphasias may be said to occur in enterprises unable to "read" their situations or to carry into effect their necessary actions. Paralysis from brain injury is analogous to "paralysis" from breakdowns in the higher echelons of the line-and-staff organization. Blindness and deafness in individuals are similar to the "blindness" and "deafness" of bankrupt businesses and governments. Persons die from countless reasons; organizations and institutions probably die for similar reasons and for just as many. The point again is this: Looking at the central nervous system for counterparts to communication disorders in groups may produce suggestions for defining problems and formulating hypotheses.

The scientific grounding and the attitudes of the medical professions also may guide communicationists in dealing with the interminable squabbles over the ethics of debate and of persuasion and over whether a given composition or description *is* "poetry," "art," "science," "literature," "good," or "not good." In medicine the quibbles are less frequent than in communication, and a relatively exact code governs interpersonal and intergroup problems. The basis for the approach is unequivocal—everything focuses upon the survival and the health of the patient. Charlatans, oversimplifiers, and ignoramuses have a relatively rough time. Do not teachers of communication and professors of communication instructors and clinicians have very similar problems?

Perhaps these problems will continue to plague us until we can

[3] In Jurgen Ruesch and Gregory Bateson, *The Social Matrix of Psychiatry* (New York: W. W. Norton & Co., Inc., 1951), ch. 6.

break out of our traditional orientations and embrace a philosophy of depth and dynamism similar to that which has helped the medical professions. Would it not be helpful for journalists, debate coaches, playwrights, and directors, and other mass media specialists to come to look upon their work as group therapy and development designed with the sole aim of providing for the survival and the health of the patient (group)?

Progress in the medical professions has come as research has extended into more and more of the relationships of muscle, fibre, and cell and of the organs and the systems. Similarly progress in ascertaining the unknown variables of communication perhaps can come only if investigators discover the basic truths. Those among the more intelligent patients who make their own maladies the object of careful study often survive longer because they know more about their own symptoms and processes. The greater poets, according to John Ciardi,[4] do likewise in respect to their creativity. Since they know how they create and thus know more about keeping their processes going longer than do some of their fellows, they enjoy a long intellectual life. In the medical arts and sciences highly efficient physicians and surgeons are produced in great numbers by plan, if not by formula; in the communication arts and sciences we would call their equivalents geniuses, but they are few indeed. Perhaps even our system of education for communication would profit from a testing of hypotheses developed as analogues of the system of professional training which now exists in medicine.

The Fuller Use of Well-known Sources of Analogues

The possibility thus exists for communication research investigating hypotheses derived from analogues based upon communication models which have been largely neglected. (The writer did not discover the human nervous system as a possible model, but he does consider it to be an excellent example of a model which deserves greater utilization.)

A second possibility—and this is the focus of this present section—is a fuller use of sources of analogues which already are well known. Cybernetics, for example, has supplied communication theorists with thought-provoking parallels between the func-

[4] "Parable for Critics," *Saturday Review*, XL (Sept. 28, 1957), 24.

tioning of the machine and the operation of various communication systems. This field and various others, however, should be explored more fully and in greater depth. Two possibilities are (1) the formulation of analogues which are inherently more profound than some of those already known and (2) the examination of known analogues with greater creativeness, thoroughness, and depth than in the past.

One method of strengthening the research in relatively old areas is the use of one discipline to illuminate another. For example, general semantics can be applied to cybernetic theory with a view toward gaining more profound insights than those already perceived.

Cybernetics promises greater truths than those already derived. Its domain embraces all of the possible relationships which occur within persons, between person and person, between person and group, and between group and group. Unlike the human processes themselves, it keeps in clear focus what something does and how it changes without any complicating factors arising from what it is. Its emphasis is upon coordination, regulation, and control—three areas of human communication which require astuteness in formulating hypotheses and skill in carrying out research.

Since general semantics also is concerned with coordination, regulation, and control, its principles may be highly useful in seeing deeply into the formulations for human communication which cybernetics may suggest. The two are sufficiently alike for the mind to perceive likenesses, yet different enough to give the imagination the stimulation required for creativity.

Various other combinations of two or more areas may be a major tool for the communication research of the future. Cybernetics emphasizes the control mechanisms, and information theory emphasizes the messages; the study of the findings of the two fields in combination should be fruitful.

Cybernetics has contributed the parallel in the workings between a superadvanced calculating machine and the communicating system of neural networks and organs in the person. Both systems are processors of information. The units, the assemblies, the electrical and the mechanical feedbacks, and the electrical networks as they *link up together in their operations* have correspondences to phenomena within and among the sense organs,

the cell assemblies, the reflex arcs, the phase sequences, the coordinating centers and the homeostatic (feedback and control) behaviors in the central and the autonomic systems. The processing of information through the organs and the neural networks seems to have many analogies *to the linkages* which go on in the calculating machine.

Using the findings and the techniques of one field to illuminate another, of course, is not new. Korzybski, for example, used neurology as a means of securing insights regarding the attitudes of human beings toward signals, signs, and symbols. The points that this subsection is making are that communication theory has utilized this approach inadequately and that future research workers may move in this direction.

Future Contributions

But what is the probable future of research in communication? What new achievements seem to be within reach? Can communication research lead the way for workers in other areas? What is the future of the interdisciplinary approach? Not all future efforts will depend upon the creation of new analogues or the improved use of old ones. What are some possible details of the total picture?

Achievements Which May Be Within Reach

Unification of the communication area, which now is as fragmented as are the other fields of knowledge which employ diverse, specialized research tools, seems possible. Cybernetics and general semantics are so broad in respect to parallelisms and such other relations as order, function, and structure that a perceptive application of their findings may lead to a basic rationale wide enough to encompass all relevant disciplines.

Keeping the focal point in mind also can lead toward the formulation of the rationale which does not now exist. Just as the survival and the welfare of the patient provides a core holding the elements of medicine together, so can the view that the function of communication is group welfare and survival unify the parts which now are diverse and whose relationships too often are only dimly perceived. Teachers, clinicians, writers, artists, orators, and critics will have a common meeting place when they

think of social welfare as the end to which all communicative acts are properly directed.

The second possible future achievement is a clearer understanding of interpersonal communication—an area which scholars have neglected grossly. The basic unit for study is the two-way process which goes on among two or more persons in respect to an idea. Difficulties among human beings originate most frequently in this seemingly simple relationship. If individuals ignore feedback and checking, they blithely talk themselves into misevaluations of the facts and form stupid conceptions of each other. Again, a two-discipline approach may be helpful: Korzybski's consciousness of abstracting is a method of controlling harmful self-generated self-reflexiveness, and sociometry provides the techniques for defining and describing the problem.

All the other specialties in the arts and all the pathologies of communication should be seen as extensions of interpersonal communication. Mass media in all their complexities alter the sender-receiver relationship in only one fundamental way—the multiplication of the number of listeners and readers. Consequences of this extension of the audience, of course, are grave and numerous—for example, poor feedback hampers authors, editors, and directors. The point, however, is that a clear view of the nature and the purpose of communication will assist in defining these problems and in securing solutions. Incidentally, the massive work of J. L. Moreno in sociometry and sociodrama should be helpful.

Contributions to Other Fields

In putting their own discipline into better order, communication scholars may find that they can make unexpected contributions to other disciplines. Research laboratories in all areas of knowledge are pouring forth such vast amounts of data that the problem of the unification of basic knowledges is becoming both more critical and more difficult.

In applying cybernetics, general semantics, and related explanations of the brain and nervous system we may come to comprehend the nature of the communication behaviors of the person as he adjusts to the varied fact-territories with which he must cope. The symbols produced must parallel all the important relationships with which men must deal if their messages are to contribute to their welfare. Parallel orders of relationships—

that is, analogies and figures of speech—have always been used by effective symbolizers and communicators. These persons thus have tended to put all of their knowledges together, but in the increased specializations of the curriculum the inherent parallels among all the main divisions of the curriculum have been lost, and the countless parallels which may be used have never been searched out. Training to do this is needed if the student is to see the coherence in everything he knows. Those who work earnestly at the deepest levels of communication theory will create techniques for coordinating disciplines which other fields may adopt, and indeed, because of their training in working with relationships these specialists may even play active roles in the unification of knowledge in other areas.

Preliminary studies at the University of Denver along these lines are promising. Students think that they have found some of the basic relationships which operate in a parallel manner among all of the levels of information from Physics to History to Philosophy. These relationships which have been partially ascertained to operate in all of the Physical and Social Sciences, moreover, turn out to be necessary bridges into the Humanities and the Fine Arts and thus ultimately become a means of releasing the powers of creative writers.

It is becoming more and more clear that the social sciences cannot advance much beyond the understandings available from communication theory and practice, while at the same time communication science is bound utterly by the developments in the basic medical sciences. While the medical profession is finding that there must be a coherence and wholeness (communication) among the various organs and cell assemblies of the human body, the social scientists are beginning to say that there must be a similar coherence and linking up (communication) within and among the organs and the institutions of society. It is an interesting question as to how close the analogy may be. But this cannot be determined until researchers undertake the specific questions which this analogy suggests.

Might not the social scientists look to the profound principles of communication (including feedback and homeostasis) in the human body for their principles of health and therapy of social bodies? The biologists are close to resolving the mysteries of life itself—those of growth, aging, and decay in the human body.

Should not we be watching them closely for the same principles which may be applicable to communication in the growth and the health of human groups? In this respect there has been available for some forty-nine years the great work of C. S. Sherrington on the *Integrative Action of the Nervous System*,[5] whose five laws of spinal induction suggest profound principles for our mass media directors and authors.

One other point on interdisciplinary research seems pertinent: reverse analogues also may prove helpful. The first section of this paper dealt in detail with hypotheses in communication theory which the human nervous system can provide, but the possibility also exists that neurologists and medical research workers may profitably examine human relationships as a means of finding insights into the unsolved problems of their own areas.

Future of Interdisciplinary Research

The massive, long-range, interdisciplinary program of research which the future demands can proceed only to the extent that problems of terminology and definition can be resolved. Terms in communication theory currently come from rhetoric, logic, grammar, phonetics, linguistics, psychology, sociology, and mathematics. Although such a diversified source of a vocabulary is not necessarily bad and indeed is likely to prove beneficial, a problem currently exists because few scholars are familiar with all of these fields and so far no common, universally understood set of terms has emerged. Although the referents to most of these special words are reasonably precise to the man familiar with the discipline from which they come, they frequently do not carry the same unambiguous meaning to scholars with other fields of specialization.

Conclusion

The human brain is the great mirror and symbolizing counterpart of the Universe—because it can produce symbols it enables human beings to utilize the experience of each other for further advance. In fact, as Alfred Korzybski pointed out, the brain is designed to function parallel with the relational dimensions with

(Continued on page 33.)

[5] (New Haven, Conn.: Yale University Press, 1912), Lecture 5.

GENERAL MODELS OF COMMUNICATION RESEARCH: A SURVEY OF THE DEVELOPMENTS OF A DECADE*

F. Craig Johnson and George R. Klare**

The purpose of this paper is to report the activity and interest in general communication models from 1950 to 1960. The term *communication* is used here as the transfer of information (in many fields of work).[1] Deutsch defines a model as ". . . a structure of symbols and operating rules which is supposed to match a set of relevant points in an existing structure or process."[2] Bross states that a model represents a process of abstraction from the "real world" in which the essential features are emphasized by eliminating unessential detail.[3]

The models reported on here are not physical models like those of the Ptolemaic astronomers, purely verbal models like those used in Aristotle's *Rhetoric*, or mathematical models like the ones which Gauss employed in probability theory, but rather are diagrammatic (plus verbal) abstractions. The basis for organization in this paper is the purpose of communication: models pertaining to the personal or physiological side of communication are characterized as face-to-face, and those which

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* Starred articles are those which belong to the series commemorating the decennial of the NSSC. They either assess the developments of the last ten years in a particular aspect of the total field of communication, or they analyze the present status.

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[1] Colin Cherry, *On Human Communication* (New York: John Wiley & Sons, Inc., 1957), p. 247. Cherry notes that in Britain, as opposed to America, *information* refers to the broad field of scientific method, including *communication*, and even here there are at least two possible definitions of *information*. Since, however, the definition of this term does not affect our definition of *communication*, we have not felt it necessary to define or exclude either one.

[2] K. W. Deutsch, "On Communication Models in the Social Sciences," *Public Opinion Quarterly*, XVI (Fall, 1952), 356–380.

[3] Irwin D. J. Bross, *Design for Decision* (New York: The Macmillan Co., 1953). Chapter 10 illustrates the role played by models in scientific thinking.

lie in the technical or mechanical side are called place-to-place. Like all general systems of classification this one breaks down when applied to some specific cases, but it does at least provide a general picture of the two main streams.

Place-to-Place Communication

In this section we will discuss the growth of the technical place-to-place orientation. Since the emphasis in this article is on the use of communication models in the 1950-1960 decade, we will consider earlier history only very briefly.

Telecommunication History

As might be expected in the history of any major idea, the origin and the originator of the study of place-to-place communication cannot be unambiguously assigned. For convenience, therefore, we will start with the development of "telecommunication" systems. Peaks in this history are, of course, Morse's sending of a telegraph message in 1844, Bell's invention of the telephone in 1876, and Marconi's development of wireless telegraphy around 1895. With these systems available, interest spread to the development of appropriate theory and the formulation of models of communication.

Among the important early studies was that of Nyquist on the relation of rate of transmission of telegraph signals to bandwidth.[4] Hartley developed this notion further in his statement of the relation of quantity of information transmitted to bandwidth and time. Of major importance was Hartley's definition of *information* as the successive selection of signs or words from a given list. He further suggested that the amount of information (H) was equal to the number of signs in a message (N) times the logarithm of possible signs (S), or $H = N \log S$.[5]

The Influence of Shannon

This work led directly to Shannon's presentation of the

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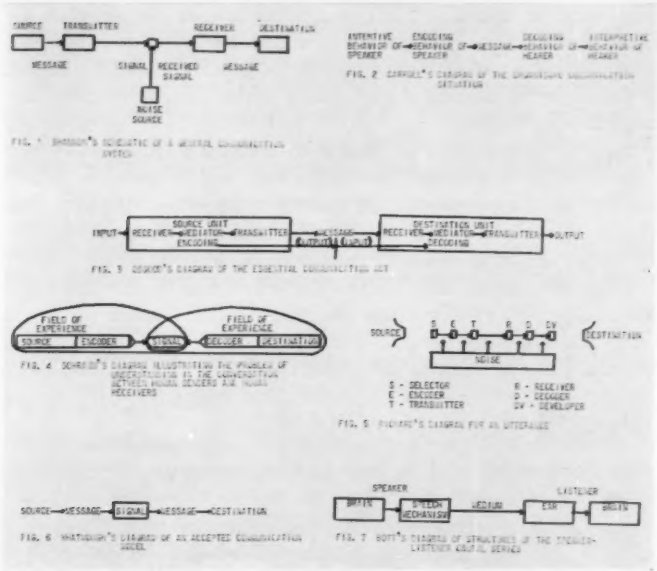
[4] H. Nyquist, "Certain Factors Affecting Telegraph Speed," *Bell System Technical Journal*, III (April, 1924), p. 324. Cherry credits Kupfmuller of Germany with simultaneous statement of this relationship (see *On Human Communication*, p. 42).

[5] R. V. L. Hartley, "Transmission of Information," *Bell System Technical Journal*, VII (July, 1928), p. 535.



FIGURES 1–7

mathematical theory of communication.[6] Of all single contributions to the widespread interest in models today, Shannon's is the most important. For the technical side of communication research, Shannon's mathematical formulations were the stimulus to much of the later effort in this area. This point seems worth noting even though this paper is not emphasizing mathematical models. In addition, Shannon also presented a schematic diagram of a general communication system (see Figure 1), which was the source of impetus for many subsequent diagrammatic models of the general communication process.

In Shannon's system the five parts perform the following specialized functions: The *information* source produces a message or a sequence of messages to be communicated. The *transmitter* operates on the message in some way to produce a signal suitable for transmission over the channel. The *channel* is the med-

[6] C. E. Shannon and Warren Weaver, *The Mathematical Theory of Communication.* (Urbana, Illinois: University of Illinois Press, 1949).

ium used to transmit the signal from transmitter to receiver. The *receiver*, which ordinarily performs the inverse operation to that of the transmitter, reconstructs the message from the signal. Finally, the *destination* is the person or thing for whom the message is intended.

Another important contributor to communication theory was Wiener, who emphasized the statistical foundation of communication. In his description of control systems as basically communication systems, he also emphasized one of the most frequently borrowed concepts in this field, *feedback*.[7]

With this brief introduction we may pass to the 1950-1960 decade, which clearly bears the marks of Shannon's influence. The place-to-place emphasis of technical communication, for example, can be seen in the models designed to describe human communication. Special characteristics applicable only to human beings, of course, have been added.

The Technical Model in Human Communication

Among the first diagrammatic models to appear in this decade was that described by Carroll[8] and presented in Figure 2. The various parts of the model have the following functions. The *intentive behavior of the speaker* refers to the speaker's having some information to transmit and some excitatory tendency to transmit it. The events are behavioral (i.e., responses) and are in some sense goal-directed or adjustmental (but not "mentalistic"). The *encoding behavior* of the speaker refers to (*a*) the simultaneous or sequential "choices" or "decisions" made by the speaker from his repertoire of learned responses (e.g., language sounds) and (*b*) the motor behavior (e.g., speech) required to produce them. The *message* refers to a physical event which emanates from the speaker. It is sound waves, marks on a page,

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[7] Norbert Wiener, *Cybernetics* (New York: John Wiley and Sons, 1948). Feedback, as used here, refers to the feeding of signals back from the output or "receiver" end to the input or "transmitter" end with the purpose of correcting subsequent output. Note, incidentally, the recent acceptance of the notion of feedback as *basic* to human behavior by the psychologists Miller, Galanter, and Pribram (see their *Plans and the Structure of Behavior*, New York: Henry Holt and Company, Inc., 1960).

[8] J. B. Carroll, *The Study of Language* (Cambridge, Mass.: Harvard University Press, 1953), p. 88. Carroll gives credit for the model to members of a seminar in linguistics and psychology.

movements, etc., plus "noise." The *decoding behavior in the hearer* refers to the perception of the message and the discriminatory responses to it as contrasted with the "noise." The *interpretive behavior in the hearer* refers to the understanding of the message and the action it stimulates.

The major contributions of this model appear to be the emphasis on the human characteristics of intention and interpretation. Encoding and decoding, while different in appearance, are similar in nature to the machine processes in a technical model. Furthermore, there is no reason that this model is not applicable to telephone or radio transmission and therefore to place-to-place communication.

A model that seems to have little family resemblance to Carroll's but that actually has similar roots is that of Osgood. The relationship lies in Osgood's membership in the seminar from which the Carroll model emerged; Osgood's own model, presented in Figure 3, developed directly from his own theory of meaning and from psycholinguistic processes generally.[9]

In Osgood's model, the *input* is a "stimulus" composed of some form of physical energy, linguistically or otherwise coded, which is recoded into sensory neural impulses. The *receiver* operates upon these through the processes of "reception" and "perception," the *mediator* performs the operation of "cognition" (meaning, attitude, etc.), and the *transmitter* performs "motor organization and sequencing" operations. Finally, the *message*, which is the "response" in the stimulus-response chain, is at the same time the *output* of the source unit and the *input* to the destination unit. The process which leads to the *output* is *encoding*, while that of handling the *input* is *decoding*. A *destination* unit similar to the *source* unit handles the latter.

Osgood's chief modifications of the original technical model lie in his provision for both the sending and the receiving functions within the same individual and in his arrangement for taking into account the "meaning" of signals. Once again, however, the diagram fits place-to-place communication very nicely.

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[9] For the models, see C. E. Osgood (ed.), "Psycholinguistics: A Survey of Theory and Research Problems," *Journal of Abnormal and Social Psychology*, XLIX (October, 1954); Morton Prince Memorial Supplement). For Osgood's theoretical approach, see C. E. Osgood "The Nature and Measurement of Meaning," *Psychological Bulletin*, XLIX (May, 1952), 197–237.

The next diagrams are those presented by Schramm, who modified certain ideas of Osgood's and created new ones.[10] The features with the greatest similarity to Osgood's are his diagrams which picture the sender or receiver in the human communication system as a combination decoder-interpreter-encoder.[11] Schramm also borrowed and indicated the importance of *feedback* in an individual's own message and in the conversation of two persons (however, he appears to deviate from the traditional in emphasizing the input aspect of feedback more than its effect upon output). A different approach, which Figure 4 presents, shows the additional problem of understanding in conversation between a human sender and a human receiver. In this analysis, understanding is pictured as a function of the shared *field of experience* of the sender (*source*) and the receiver (*destination*).

At much the same time and apparently independently, Richards adapted the conventional diagram of Shannon to fit the broad purposes of his theory of comprehending.[12] His diagram, shown in Figure 5, can be used to depict all modes of utterance (speech, writing, and even comprehending).

In addition to this diagram, Richards presents another to show the process whereby one utterance influences another. It is the same as Figure 5 except that it contains "comparison fields," which are further contributions (inputs) between source and

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[10] Schramm's diagrams are presented in his chapter, "How Communication Works," in Wilbur Schramm (ed.), *The Process and Effects of Mass Communication* (Urbana, Illinois: The University of Illinois Press, 1954). We cannot, for practical reasons, reproduce all of them here.

[11] Another diagram with a family resemblance to Osgood's is that of Klare. (See G. R. Klare, J. E. Mabry, and L. M. Gustafson, "The Relationship of Verbal Communication Variables to Immediate and Delayed Retention and to Acceptability of Technical Training Materials," *Research Bulletin* 54-103, Air Force Personnel and Training Research Center, Lackland AFB, San Antonio, Texas.) The model was designed to serve as a framework for human communication and learning research. The tripartite presentation of the *subject* as a *receiver-mediator-transmitter* was borrowed directly from Osgood; it served to emphasize the variables in each of the three functions available for experimental research (e.g., background and ability; motivation and memory, or information storage; and composing and other transmitting abilities). Klare's modification of the traditional diagram also showed the research situation as *two* links in the communication chain, with both stimulus and response messages involved.

[12] I. A. Richards, *Speculative Instruments* (Chicago: University of Chicago Press, 1955). See pp. 17–38, but particularly p. 22.

destination. These were added to show the "something in common" that causes one utterance to influence another.

Schramm also presents further, more complex diagrams, which show the conditioning process involved in speaking and hearing and which deal with mass communication and society as communicator. These contributions are not reproduced here because they depart from "general" models sufficiently to fall outside the limits set for this report; incidentally, they borrow heavily from Osgood's conception of the conditioning process in the establishment of meaning.

Schramm's work emphasizes the special additions necessary when using a technical approach in the study of human communication, and his and Richards' inclusion of the problem of understanding (comprehension) as a function of shared (common) experience touches on a major difficulty in practical human communication. In addition to his somewhat more complex diagrams, Schramm also presents a "simple picture" of the human communication system which can serve as a framework for his more complex materials. This picture is basically a variant of Shannon's pioneering diagram of a technical communication system.

Recapitulation

Back full circle at the technical level diagram proposed originally by Shannon, we find Pierce's diagram of the typical communication system.[13] Furthermore, Pierce's system of five parts—*signal source, encoder, noise, decoder,* and *signal destination*—is almost identical with Schramm's system of *source, encoder, signal, decoder,* and *destination.* This similarity is all the more interesting, since Schramm's diagram was designed primarily for the depiction of human communication while Pierce's was intended to illustrate telephone, television, teletypewriter, and other telecommunication methods.

Still another closely related version of Shannon's basic diagram is that by Whatmough[14] (see Figure 6). His five parts—source, message, signal, message, and destination—differ chiefly

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[13] John R. Pierce, *Electrons, Waves and Messages* (Garden City, New York: Hanover House, 1956), pp. 251–252.

[14] Joshua Whatmough, *Language: A Modern Synthesis* (New York: Mentor Books, 1957).

in that the "messages" are used to replace the transmitter (or encoder) and receiver (or decoder). Whatmough's slight variation should serve as a convenient bridge between the technical or mechanical approach of Shannon and the relatively personal or physiologically oriented approaches. The mechanical system now does not overshadow the speech system so markedly, since the emphasis is on messages and (presumably) speech signals.

Face-to-Face Communication

The interpersonal, physiological, face-to-face orientation is discussed here generally along with some special applications to mass communication. Early models, noted briefly merely as items of historical interest, were largely unrelated to the work of Nyquist, Hartley, and others, and it was not until the 1950-1960 decade that the place-to-place and the face-to-face approaches came together.

Historical Background

One of the first indirect personal communication models was that which E. A. Bott developed about 1930 and which Grant Fairbanks reported[15] (see Figure 7). The basic elements of a technical communication system are represented here. The source (Speaker) has an encoder (Brain) and a transmitter (Speech mechanism). There is a channel (Medium). The destination (Listener) has a receiver (Ear) and a decoder (Brain). This process must be extended into a two-way system for feedback to be present. Models of this kind lead directly to theories of the speech mechanism which are very interesting, but they are not general communication models and therefore are not included.

Some early verbal models which originate with the work of Korzybski, Richards, Pierce, and others in semantics and semiotics are used by Johnson in an attempt to define speech in more general terms.[16] His contribution, presented in Figure 8, includes the internal processes of communication and makes a limited

[15] Grant Fairbanks, "Systematic Research in Experimental Phonetics: 1. A Theory of the Speech Mechanism as a Servosystem," *The Journal of Speech and Hearing Disorders*, XIX (June, 1954), 133–139.

[16] Wendell Johnson, "The Spoken Word and the Great Unsaid," *The Quarterly Journal of Speech*, XLVII (Dec., 1951), 419–429.

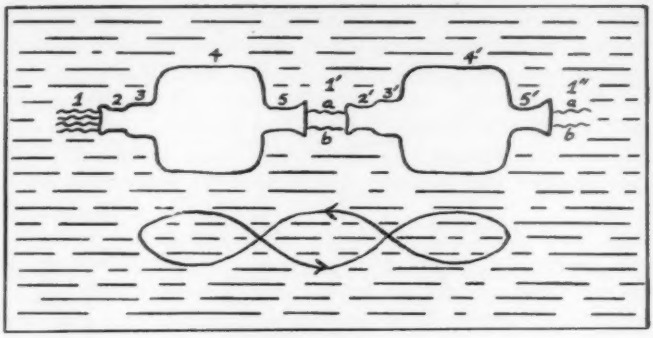

FIGURE 8

Key: Stage 1, event, or source of stimulation, external to the sensory end organs of the speaker; Stage 2, sensory stimulation; Stage 3, preverbal neurophysiological state; Stage 4, transformation of preverbal state into symbolic forms; Stage 5, verbal formulations in "final draft" for overt expression; Stage 1′, transformation of verbal formulations into (*a*) air waves and (*b*) light waves, which serve as sources of stimulation for the listener (who may be either the speaker himself or another person); Stages 2′ through 1″ correspond, in the listener, to stages 2 through 1′. The arrowed loops represent the functional interrelationships of the stages in the process as a whole.

attempt to apply the model to other communication skills such as reading, writing, etc. The purpose of the model seems to be to call attention to the importance of what goes on inside the human being's head.

A third approach to the problems of personal communication was made by Lasswell in the field of journalism.[17] He suggested a verbal model to cover communication in this general way: "*Who* says *what*, through *what channels*, to *whom*, with *what effect*?" This model provides for many general applications to the whole area of mass communication. There is an awareness—and this is particularly true in mass communication—that several channels may carry the same message.

These three historical roots—speech, semantics, and journalism—plus the influence of Shannon, form the foundation for most of the activity in personal communication models in the 1950-1960

[17] Harold D. Lasswell, "The Structure and Function of Communications in Society," in Lyman Bryson (ed.), *The Communication of Ideas* (New York: Harper & Brothers, 1948).

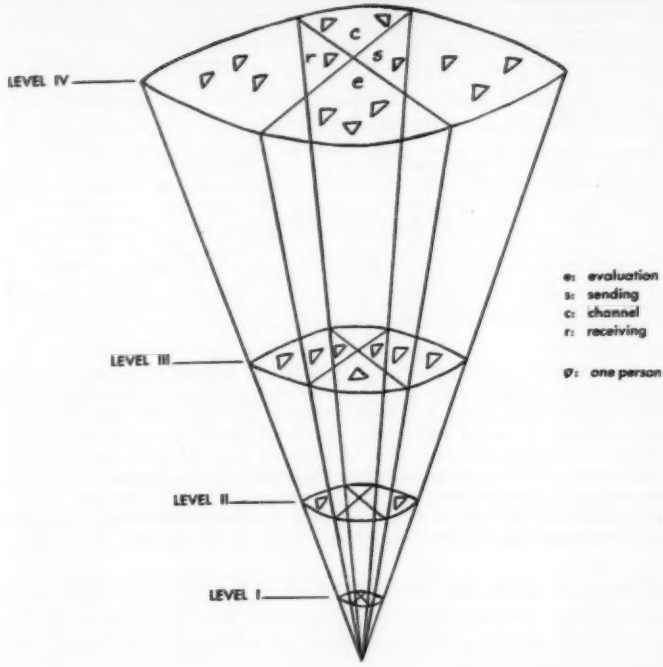

FIGURE 9

decade. The only other major source of influence is from the field of social psychology.

General, Personal Communication Models

One of the first general, personal communication models constructed during the 1950-60 decade was that by Ruesch and Bateson.[18] The authors refer to the work of Shannon when they talk about information, but their orientation to communication clearly comes from social psychology and psychiatry.

The vantage point of this model, presented in Figure 9, is that of a superhuman looking at human communication from a posi-

[18] Jurgen Ruesch and Gregory Bateson, *Communication: The Social Matrix of Psychiatry* (New York: W. W. Norton and Co., 1951).

tion outside the social system which he studies. At the intrapersonal level the individual finds himself limited by self; at the interpersonal level the perceptual field is occupied by two people; at the group level, by many people; and at the cultural level, by many groups of people. In a table on page 277 of their book the authors relate these levels of communication to (1) origin of message, (2) sender, (3) channels, (4) receiver, and (5) destination of message.

Here we see communication theory applied to the very close personal relationship of psychiatrist to patient. However, the authors gain a more general model by placing the levels of communication in what they term the social matrix. This matrix is a larger scientific system in which both the psychiatrist and patient are an integral part.

A second personal model was constructed by Newcomb.[19] He received his general definition of communication from Miller who, in turn, relied on the early work of Shannon. Newcomb's model looks very much like the diagrams of social psychologists who work with social group networks.[20]

The model, though not presented diagrammatically here, may be described thus: *A* transmits information to another person (*B*) about something (*X*); *A* orients himself to *X* and to *B*; *B* also orients himself toward *X* and toward *A*. Communication here is a common and effective way by which man orients himself to himself and to other men in his environment. The stress and strain of communication is placed in a system of symmetry, and the dynamic forces can be studied and predicted in these terms. Asymmetry also has a place in this scheme when people "agree to disagree."

Westley and MacLean[21] develop the next general model for

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[19] Theodore M. Newcomb, "An Approach to the Study of Communicative Acts," *Psychological Review*, LX (Nov., 1952), 393–404.

[20] Two articles can be found in the *Journal of Abnormal and Social Psychology*, XLVI (1951), on group network models—H. J. Leavitt, "Some Effects of Certain Communication Patterns Upon Group Performance," and G. A. Heise and G. A. Miller, "Problem Solving by Small Groups Using Various Communication Nets." Again these are specific in nature and do not have the more general character of those reported in this paper.

[21] Bruce H. Westley and Malcolm MacLean, Jr., "A Conceptual Model for Communications Research," *Audio-Visual Communication Review*, III (Winter, 1955), 3–12.

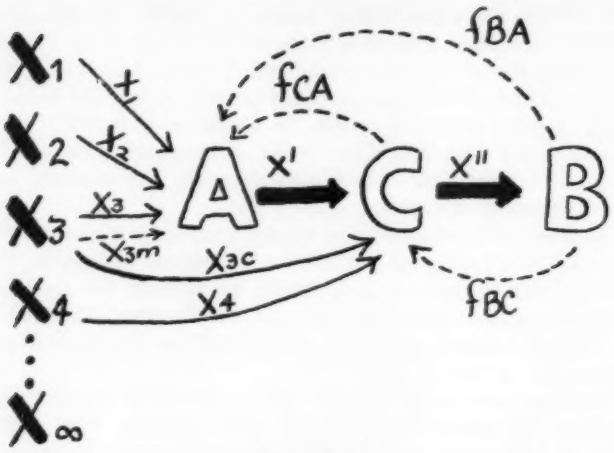

FIGURE 10

communication research. They state that the model of Lasswell is incomplete in that it ignores feedback and requires the presence of a communicator. The model of Shannon when combined with the work of Wiener has, they feel, several drawbacks, since it requires the presence of a communicator and poses all of the problems of a "borrowed" model. They find Newcomb's model useful for the study of interpersonal communication, but feel it does not take care of the mass communication problem. In mass communication more channels are used and "orientative" feedback is minimized or delayed. Westley and MacLean also note that in Newcomb's model *A* and *B* can only be people, but there may be times when *B* is a group or even a total social system. For these cases a *C* is needed to provide *B* with a more extended environment. The model above (see Figure 10) represents a mass communication system in which a large number of *C*'s receive from a very large number of *A*'s and transmit to a vastly larger number of *B*'s who simultaneously receive from other *C*'s.

The new ideas presented in this model are that in the mass situation there is a possibility of fortuitous communication and fortuitous feedback. There must be a *C* role to serve as an extension of the environment.

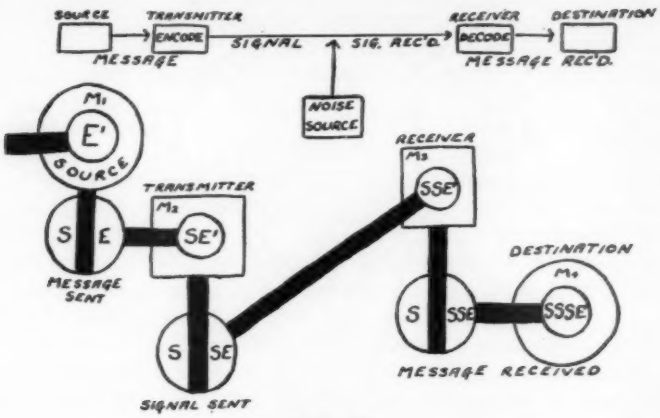

FIGURE 11

Gerbner builds a model which appears to be an extension of the Lasswell type, since the ten basic aspects of communication research are included.[22] Actually, as will be seen, he borrows heavily from Shannon. Figure 11 reveals this relationship.

A COMBINATION OF THE TWO TYPES

Gordon Peterson, perhaps more than any other person, makes an attempt to bring together the several notions of communication theory.[23] He says, "Such areas as symbolic logic, information theory, and the theory of signal detection provide much of the essential mathematical foundation for speech communication theory. But these are basic tools, not the complete theory. The study of speech as a behavioral process involves, in addition to mathematics, such areas as acoustics, physiology, learning theory and linguistics."

Peterson's model includes the basic physiological systems involved in speech communication, but he also tries to relate these to the models which this article discusses under "place-to-place

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[22] George Gerbner, "Toward a General Model of Communication," *Audio-Visual Communication Review*, IV (Summer, 1956), 171–199. A verbal model is presented as a basis for several diagrammatic models.

[23] Gordon E. Peterson, "Speech and Hearing Research," *Journal of Speech and Hearing Research*, I (March, 1958), 3–11.

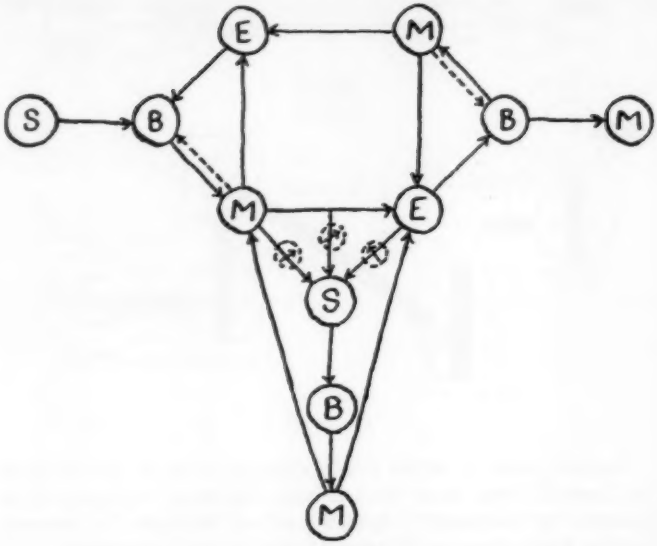

FIGURE 12

communication" (see Figure 12). His is the last general model to be discussed. It is tempting to bring in special models appropriate to special fields, but space does not permit.[24]

SUMMARY

Two conclusions can be drawn from a study of communication models in the 1950-60 decade. First, there have been great interest and much activity in diagrammatic models. This popularity may be because of the efficiency and the clarity with which they present otherwise complex verbal concepts. Second, and perhaps more important, most of the models are related to Shan-

(Continued on page 45.)

[24] We cannot comfortably pass over B. F. Skinner. He has not attempted a general model; to be sure, he prefers to avoid such terms as *communication* and *information* altogether. Nevertheless his "functional analysis of verbal behavior" is a provocative approach that leads to many fertile ideas. (See *Verbal Behavior*. New York: Appleton-Century-Crofts, Inc., 1957.)

COMMUNICATION IN DISCUSSION AND GROUP PROCESSES: SOME RESEARCH TRENDS OF THE DECADE 1950–1959—Part II*

JOHN W. KELTNER

PARTICIPATION

While other areas of study have real significance in regard to participation, some studies attempt to deal specifically with the problem. Bales found that equality of verbal participation is rare in a discussion group,[36] and with Strodtbeck he classified remarks in discussion and noted that comments are evenly divided between question-reaction types and answer types.[37]

The rate of participation per member in a group appears to be a factor of the size of the group, according to Stephan and Mishler.[38] They also suggest that large groups tend to have a similar spread of participation among those who take part the most frequently.

"Buzz" sessions, a device designed to get wide participation, appear to affect both participation and problem solving but do not seem to be related to attitude changes.[39] Active participation in a role-playing session, however, appears to influence participants more than nonparticipants. Participants in role playing also seem to have more confidence in their attitudes than do nonplayers.[40]

Bovard examined the effect of various levels of participation and found that a high level of member-to-member verbal participation seemed to enhance interpersonal feelings and emotions.[41]

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* Part I, which appeared in the December, 1960, issue, summarized research pertaining to eight subtopics.

[36] Bales, *loc. cit.*

[37] F. L. Bales and F. L. Strodtbeck, *et al.*, "Channels of Communication in Small Groups," *American Sociological Review*, XVI (1951), 461–468.

[38] F. F. Stephan and Elliot G. Mishler, "The Distribution of Participation in Small Groups," *American Sociological Review*, XVII (1952), 608.

[39] W. E. Vinacke, "Some Variables in Buzz Sessions," *Journal of Social Psychology*, XLV (1957), 25–33.

[40] Irving L. Janis and Bert T. King, "The Influence of Role Playing on Opinion Change," *Journal of Abnormal and Social Psychology*, XLIX (1954), 211.

[41] Everett W. Bovard, "The Experimental Production of Interpersonal Affect," *Journal of Abnormal and Social Psychology*, XLVI (October, 1951), 521–528.

The work of Bales et al. in devising methods of identifying the character of contributions has given to us a research tool of great value.[42] Much remains to be done, however, in applying this tool and refining it for more effective use in the analysis of participant behavior in groups.

Participation studies appear to have concentrated on the overt aspects of communication. More needs to be done with the relationship of the overt behavior to motivation, setting, personality, information, etc. We may begin, however, with the assumption that participation is a variable dependent upon group size, upon participation standards of procedure, upon individual variations in type and rate, and upon interpersonal feelings and emotions.

Structure, Networks, Channels, and Patterns

Some of the more interesting studies in communication have dealt with the communication structures in groups. Many of these studies used laboratory devices which restricted the communications to written notes within prescribed patterns or "nets." In spite of these restrictions, the results have sound implications for face-to-face discussion.

The persons at the center of the communication network tend to become the leaders of the group and to assume most of the decision-making functions.[43] The pattern or structure of the group per se seems of little importance in group problem solving unless communication between members is possible.[44]

Group-centered structures seem to result in a greater change in perception toward a common norm than do leader-centered structures.[45] As compared with group-centered, the centralized type of situation appears less active and despite its distinct leadership and organization is unsatisfying to its members as a whole. In contrast to this the structure which provides for interaction between members is most enjoyed, but seems unorganized and

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[42] Robert F. Bales, *Interaction Process Analysis* (Cambridge: Addison Wesley Press, 1951).

[43] R. F. Bales, "In Conference," p. 48.

[44] Joseph Berg, "Cooperation Without Communication and Observation," *Journal of Social Psychology*, XLI (1955), 282–296.

[45] Everett W. Bovard, Jr., "Group Structure and Perception," *Journal of Abnormal and Social Psychology*, XLVI (1951), 399–405.

leaderless.[46] But when the structure of a group is determined by the decision-making factors rather than by the communication channels in a topological position, the centralized structure seems to produce better performance.[47]

Restrictions and disturbances in the communication system have also been studied. Groups with restricted communication systems seem to be more effective in the transmission of *information* than do unrestricted groups, but unrestricted systems seem to be more effective in dealing with abstract problem-solving concepts.[48] Under conditions of disturbances of the *oral* communication channels, the net that allows for all members to talk and listen to each other seems more efficient than the one which provides for only one-way communication.[49]

The channels and nets of communication within a group with restricted oral communication seem to affect the leadership of a group, the perception of a group, the activity of a group, and the degree of satisfaction with the process and with the transmission of information. The network studies are limited by the devices available for determining direction and control of the channels. Effective analysis and study of the channels and the nets in face-to-face groups appear to be beyond the means of appraisal used during the period reviewed. New studies should attempt to overcome this limitation.

Information and Knowledge

Information and knowledge have long been assumed to play a significant role in the outcome of discussions. The range of studies, however, fails to deal with this assumption adequately. Information, Festinger notes, is most likely to be communicated to people who are perceived as being most affected by it.[50] Having information, however, may be related to the leadership and

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[46] H. J. Leavitt, "Some Effects of Certain Communication Patterns on Group Performance," *Journal of Abnormal and Social Psychology*, XLVI (1951), 38–50.

[47] Mulder, *loc. cit.*

[48] Sol Klier, "The Effect of Communication Patterning on the Problem Solving Function in Small Groups," Ph.D. Dissertation, New York University, 1955. Abstracted in *Dissertation Abstracts*, XVIII (1958), 308–309.

[49] George A. Heise and G. A. Miller, "Problem Solving by Small Groups Using Various Communication Nets," *Journal of Abnormal and Social Psychology*, XLVI (1951), 327–335.

[50] Festinger, Back, Schacter, *et al.*, *op. cit.*, p. 129.

centrality of position in a communication network, but the data are inconclusive on this assumption.[51] And, further, it is suggested that failure to provide information to a group will *not prevent* a solution but will only delay it.[52]

Information relating to our own position and that of others has significant bearing on the group. The impressions we have of a person or thing are determined by the cues we receive and the expectations we have.[53] At the same time an increase in the amount of information among members in a group is accompanied by less randomness of thinking about each other.[54] Further, a person's ability to perceive his own position in the structure of a group seems to reflect his ability to perceive other matters dealing with the unit.[55]

The purpose, the need, and the function of a group seem to be factors in determining the nature, the amount, and the quality of information that is useful in a group setting. The problems of validity, reliability, etc., do not seem to be as significant as acceptability. This generalization, however, suggests a fruitful area for more investigation.

Feedback

One of the vital aspects of communication is feedback. Several studies reveal some of the values of the process. The listener has in his control many factors which can improve the total situation in a group.[56]

Free feedback has been found to improve accuracy and to facilitate learning a mutual language; it also produces confidence

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[51] Shaw and Gilchrist, *loc. cit.*; also, John K. Hemphill, *et al.*, "The Relationship Between Possession of Task Relevant Information and Attempts to Lead," *Psychological Monographs*, LXXI (1957), 19–20.

[52] Marvin E. Shaw, "Some Effects of Unequal Distribution of Information Upon Group Performance in Various Communication Nets," *Journal of Abnormal and Social Psychology*, XLIX (1954), 547.

[53] Martin Grossack, "Cues, Expectations and First Impressions," *Journal of Psychology*, XXXV (1953), 245–252.

[54] Bovard, "Interaction and Attraction . . . ," p. 487.

[55] F. L. Greer, E. H. Galanter, and P. G. Nordlie, "Interpersonal Knowledge and Group Effectiveness," *Journal of Abnormal and Social Psychology*, XLIX (1954), 411.

[56] S. Frank Miyamoto, Laura Crowell, and Allan Katcher, "Communicant Behavior in Small Discussion Groups," *The Journal of Communication*, VII (Winter, 1957), 151–160.

and amity. Zero feedback brings the opposite.[57] Feedback also results in the improvement of the learning process.[58] In training subgroups, feedback on personal matters improves group problem solving efficiency markedly and significantly.[59]

The specific skills and processes involved in feedback are still somewhat primitive in the face-to-face group. Since the values of feedback are apparent, it seems that experiments looking toward more exact knowledge and toward improvements are desirable.

Language

Studies of language behavior in discussion groups have been rare. Black found that ambiguity and the misuse of examples seem to work against effective communication in discussion.[60] Stageberg identified "obstacle words" in discussion as equivocal words, relative words, classifiers, fictions, emotive words, projective adjectives, and incomplete terms.[61]

Blake and Mouton suggest that motion and body language have an important value in developing group communication.[62] They also found that high language skill seems to be associated with influence and group skills.[63]

Language is undoubtedly one of the neglected areas of research in discussion. Nonverbal communication in discussion is a subarea which offers many opportunities for research.

Conclusion

North defines the variables in the communication cycle of the small group in terms of *Speaker Factors* (intent and motivation

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[57] Harold J. Leavitt and Ronald A. H. Mueller, "Some Effects of Feedback on Communication," *Human Relations*, IV (1951), 410.

[58] Margaret W. Pryer and B. M. Bass, "Some Effects of Feedback on Behavior in Groups," *Sociometry*, XXII (1959), 56–62.

[59] Ewart E. Smith and Stanford S. Kight, "Effects of Feedback on Insight and Problem Solving Efficiency in Training Groups," *Journal of Applied Psychology*, XLIII (1959), 209.

[60] Edwin B. Black, "A Consideration of the Rhetorical Causes of Breakdown in Discussion," *Speech Monographs*, XXII (March, 1955), 15–19.

[61] Norman C. Stageberg, "Obstacle Words in Group Conference," *The Journal of Communication*, II (May, 1952), 82–87.

[62] Blake and Mouton, *op. cit.*, pp. 175–180.

[63] Robert Blake and Jane Mouton, *Personality Factors Associated With Individual Conduct in a Training Group Situation* (Dallas: Human Relations Training Laboratory, Southern Methodist University, 1956), pp. 26–27.

and speaker's image of the "other"), *Message Variables* (mechanical and functional factors and content), *Hearer Variables* (motivation to listen, attitudes toward the speaker, frame of reference, and the hearer's image of the speaker), *Verbal and Nonverbal Feedback* (length of delay, differences in completeness, and degree of fidelity), *Group Variables* (group standards, nets and channels, and group size and composition) and *Situation Variables* (spatial arrangement, nature of the task, and the frequency and the length of meetings).[64]

A quick look at this brief review will show you that many of these factors have been studied in the research of the past decade. It would seem, however, that we are probably just at the threshold of concentrated studies in the direction North suggests. The work reported here certainly indicates that we have a long way to go before we can say that we are getting close to an understanding of the complex constellation of communication skills which occur in discussion and group process. And, following the basic research, there will remain the monumental job of translating fundamental information into training methods so that the ultimate product will be group discussion improved in productiveness and significance.

On what phases should the concentration of research occur? Some of our most critical needs are related to the following problems:

1. What is the effect of various types of training in group processes, sensitivity, and group skills on the performance of individuals within groups and on groups as units?
2. What factors in the decision-making process in groups are subject to change and improvement as a result of training?
3. Is there a modal structure in the decision-making process that is consistent in all groups?
4. How do the conformity pressures within a group affect the working efficiency of individuals and the group as a unit?
5. What is the relation of personality to the decision-making skill of an individual alone and in a group?
6. What communication patterns are most productive in the face-to-face discussion group?

[64] A. J. North, "Language and Communication in Group Functioning," *Group Psychotherapy*, X (1957), 300–318.

7. What types of language behavior actually *increase* group productivity?

8. How can we assess the intent and the motivation of speakers in face-to-face discussion?

9. What is the type of setting under which groups may operate most productively?

10. How can the training processes be improved?

All of these problems, and many more, need further study. One key problem, of course, is the development of instruments and methods which will provide the researcher and the trainer with more effective tools of observation. In this area we are indeed at a primitive stage.

The need, therefore, is great for a many-disciplined, yet coordinated approach to the problems in group discussion communication. The next ten years should bring some exciting discoveries if we can only find the proper research tools, direct our efforts wisely, and secure adequate administrative and financial support.

FUTURE DIRECTIONS IN COMMUNICATION RESEARCH

(Continued from page 12.)

which men must deal in mathematics.[6] Through this astonishing and beautiful organism the past becomes related to the present, and thus man can generate the foresight necessary to bring about his own progress. The human brain, apparently the end product thus far of all evolution, is the ideal relating, coordinating, and unifying apparatus. This bringing of health, "wisdom," and adequacy among the organs of the human body is similar to the functions which the higher communication and coordinating centers of our groups and institutions should perform.

But the human brain is more than the tool by which man progresses; it also can serve as a model useful in studying communication processes. Future research probably will use analogues derived from this and similar models, and in time the hypotheses so derived will become deeper and more penetrating and the investigations of hypotheses also will become increasingly careful and perceptive. Future contributions, using both the methods which this paper describes and various others, should be substantial both in communication and in related areas.

[6] *Science and Sanity*, rev. ed. (Lakewood, Conn.: Institute of General Semantics, 1958), chs. 18 and 19.

Guest Editorial:

BASIC KNOWLEDGE MUST COME FIRST

Because mass communication is so all-pervasive in contemporary society and because mass media project a continuing and unrelenting demand on our senses, distinguishing between the overwhelming flow of communication content and communication itself as an orderly and logical process becomes increasingly difficult. Basic principles—what might be termed the anatomy of mass communication—tend to be glossed over because of a preoccupation with a confusing new vocabulary which purports to assess the impact and effect of the mass media on society. While courses in the communication arts proliferate and graduate dissertations explore the effects of the mass media, basic considerations are neglected. Specifically, too little attention is given to the study of the principles and the processes of communication itself.

Communication as a frame of reference for studies in interpersonal relations, in the mass media, and in public opinion and motivation research should be secondary to an understanding of the process itself and should eventuate from a knowledge of basic principles. Instead, there prevails a mystique about the content of the mass media which appears to have little bearing on the foundation upon which any body of literature should be based.

How is it possible, one may reasonably inquire, to explore the mass media without adequate definitions? How feasible and, indeed, how satisfactory are courses in the mass media and their effects which grow like Topsy and fail to stem from an understanding of basic communication principles? Students are encouraged to select one or more of the mass media and to explore them without either the ability to communicate properly or any real understanding of precisely what communication involves in either a classical or a functional sense. Similarly, at the practical level public relations experts, under the guise of "communication counselors," construct elaborate communication research programs, select "image" goals, and outline plans to influence public opinion without elementary grounding in communication theory. Troublesome problems in communication, where sensitive shades of public opinion are concerned, are

cavalierly dismissed as part of a nebulous area called "semantics." To state that the problem is simply one of semantics is to explain it away and to resolve it at the same time.

Assigning the problem, however, does not resolve it; the action merely implies that there is a need for exploration and resolution. Nor is this dismissal without resolution of tenuous problems in the area of public relations and public opinion the only common fault. So-called statements of policy which have little reference to concrete situations are communicated to the public through the mass media. These pronouncements all too often confuse words and things. They also employ stereotyping either as a convenient and deliberate way of short-circuiting scientific truths, or because the device is itself an indolent way of avoiding verbal disciplines.

No one can reasonably doubt or quarrel with a conviction that the extraordinary growth of the mass media is desirable and that interest in these phenomena is salutary. Mass media offer to mankind a highly efficient information catalyst. What can be argued, however, is that studies in the mass media should be progressive and logical, rather than haphazard. Programs which set out to survey the communication arts or to consider the use of communication in education should be predicated on courses in basic communication and in logic—in short, on those disciplines which constitute the basis for any attempt to explore the mass media, their effects, and their total impact on society.

The study of the principles of communication should be basic to practice, and this is particularly true in those areas where mass media are utilized to inform, to reflect, or to influence public opinion.

—Charles S. Steinberg

CBS Television Network

RESEARCH NOTES

FRANCIS A. CARTIER, *Editor*

One of our regular Research Notes contributors, Ted Clevenger, presented an excellent paper at the recent convention in Chicago. On theoretical models, it was easily the most stimulating paper I heard there. Since it surely will be published *in toto* in some journal, I won't attempt to report it now. But it did raise one question worth discussing: the profound effect on our thinking of a superficially plausible model. One that has plagued researchers for years is the Lasswell formula, which has appeared in various forms, the most popular of which is "WHO says WHAT to WHOM through what MEDIUM with what EFFECT." This model of the communication process subtly preserves a fallacy that nearly everyone recognizes—the idea that meanings are somehow "sent" from one person to another through language. Let us keep firmly in mind that the speaker does *not* formulate the message the receiver gets: the receiver does that, building it entirely out of memories and ideas that are already in *his* head. Ideas are *not* transmitted through communication. The only thing the receiver gets from the sender is a bunch of black squiggles on white paper or a series of vibrating air molecules. I don't know what an idea is, and I'm not at all sure what a meaning is, but I know what they are not. They are not a collection of vibrating air molecules. Now this thought is hardly revolutionary, but a great many researchers seem to overlook the point when they see models with arrows connecting little blocks labeled *Sender*, *Medium*, and *Receiver* and purporting to show the course of the *Message*.

A large part of the difficulty here, Heaven help us, is our ineptitude with the words we use to talk about communication. The term *message* is used a dozen different ways. The most common confusions stem from its use at times to refer strictly to the code (squiggles or vibration patterns) and its use in other instances to refer to the content (the idea the sender wishes the receiver to have). I doubt that we will ever straighten this mess out completely, but thinking about it once in a while may help.

In the last issue, I inquired about what had happened to research in subliminal stimulation. F. Craig Johnson, one of two

new regular contributors (the other is James P. Dee, School of Speech, Syracuse University) sent a note in reply.

Eugene K. Oxhandler, "Can Subliminal Stimuli Teach?" *Audio-Visual Communication Review,* VIII (May–June, 1960), 109–114.

The hypothesis tested in this study is that subliminal stimuli administered while a film is being projected will produce significant differences in the responses of students taking the test as opposed to the responses of students not subliminally stimulated. Undergraduate students were the subjects. Significant differences were found at the 1% level for two of the three subject groups. The author concludes that subliminal stimuli made a distinct impression on the students. —F. C. J.

Joshua A. Fishman, "A Systematization of the Whorfian Hypothesis," *Behavorial Science,* V (October, 1960), 323–339.

The Whorfian hypothesis (also referred to as the Sapir-Whorf hypothesis) holds that the characteristics of language have determining influences on the cognitive processes. The specific meaning and limits of the hypothesis have been the subject of dispute. Fishman, a social psychologist at Yeshiva University, seeks to systematize work on the theory by postulating four levels of application. The weakest level deals with codifiability: Since Eskimos have many words for different kinds of snow whereas Aztecs have only one word to subsume our separate concepts of snow, ice, and cold, the former can talk about snow with greater precision than can the latter. The second level deals with correlations between linguistic codifiability and (nonlanguage) behavioral concomitants: Learning to associate nonsense syllables with color categories proceeds much more rapidly if the categories are similar to those commonly recognized in one's native language. The third level deals with relations between linguistic structure (grammar) and cultural concomitants: The passivity and fatefulness of Navaho life and mythology find their reflection in the verb structure of their language, which makes no clean distinction between actors, actions, and objects acted upon. The Navaho does not perform an act; he participates in or gets involved in a somehow pre-existing class of events. The fourth level of the Whorfian hypothesis asserts a relation between linguistic structure and behavioral concomitants: The verb forms of Navaho, which depend upon physical attributes of the objects to which they refer, serve as a basis for predicting certain kinds of object-sorting behavior. To preserve the distinction among these four levels of application of the Whorf-Sapir hypothesis serves both to clarify the significance of each research finding and to admit to consideration much research whose original purpose did not pertain to the hypothesis. —T. C.

Victor H. Vroom, *Some Personality Determinants of the Effects of Participation* (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1960), pp. 91.

One of the 1959 award winners of the Ford Foundation Doctoral Dissertation Series, this study asks the question whether "the effects of one aspect of the democratic leadership process—participation in decision-making—vary with the personality structure of the follower." Using a group of industrial supervisors, the researcher conducted an experimental study which yielded results suggesting that the effects do vary.

—J. P. D.

Raven I. McDavid, Jr., "A Study in Ethnolinguistics," *Southern Speech Journal*, XXV (Summer, 1960), 247–254.

Particular pronunciations of the word *Negro* have different connotations and differentiate among the user's cultural norm values. ". . . A little rearranging of phonemic sequences . . . would be repaid by a considerable increase in understanding." Also, it should be realized that "traditional pronunciations are simply traditional pronunciations and not in themselves deliberate insults."

DONALD E. BIRD

Donald E. Bird died on Sunday, January 8, at the University of Missouri Medical Center, Columbia, Missouri, of a cerebral hemorrhage.

Devotion to high purposes and vigor of action toward the achievement of them characterized Donald Bird's life. He made lasting contributions not only to the students, young and old, who studied with him, but also to his profession, his church, and his community. On his own campus he constantly shared in creative discussions to better the program of the College and to represent the concerns of the faculty. He served the NSSC with untiring energy and enthusiasm as a founder and as Executive Secretary, Vice-President, and President. Through his service as a member and an official of his church and as a member of the Columbia Board of Education, Donald Bird left an imprint upon his community in a manner that brought honor to his profession.

Donald Bird's editorial in the December issue of *The Journal* is characteristic of him—"A Call to Arms!" It stands as a tribute to his life and work.

—RALPH C. LEYDEN

Stephens College

COMMUNICATION FILMS

JAMES P. DEE, *Syracuse University*

This report inaugurates a new department in *The Journal*. As presently planned, this department will appear in alternate issues, and each report will provide approximately twenty bibliographic listings of films dealing with the process of communication.

The department is intended to supplement the *Bibliography of Selected Films on the Process of Communication*, published by Syracuse University in the summer of 1960 and distributed to all members of the NSSC through the executive secretary's office. The original bibliography included forty-five titles out of approximately 150 films which the writer had previewed.

Communication means all things to all people. Consequently, some basis for selecting films has been necessary. Franklin H. Knower's communications model has served as a point of reference in deciding whether a particular film should be included. Knower's model recognizes communication as an on-going, two-way process occurring between sender and receiver and involving language and other symbol systems, types of communication, patterns and forms, media, and channels—all within the framework of the total environment.

Readers are invited to suggest films that they feel should be reported in this department. Although I have tried to contact all film libraries and producers, the number of such sources is surprisingly large. Overlooking a particular source and consequently missing a film that should be listed would be easy. When suggesting films, please include the title, the producer (if possible), and at least one source for securing a preview copy.

Abbreviations used in the entries include the following: sh, senior high school level; c, college; ad., adult; b.w., black and white; S.P., sales price; R.P., rental price; —, information not available.

THE ALPHABET. 30 min. c,ad. b.w. SP.$125. R.P.—. Producer: U. of Buffalo. Distributor: NET (Indiana U.). Language and Linguistics Series. XI.

Analyzes the English writing system and traces the origin, development, and spread of the alphabet. Shows and explains various writing systems including Sanskrit, Chinese, and Arabic. Discusses the significance of hieroglyphics in the development of written language.

THE ALPHAPET CONSPIRACY (I). 30 min. sh,c,ad. color. S.P.—. R.P.Free. Producer: Warner Bros. Distributor: Bell Telephone Co. Features Frank Baxter.

Fantasy: Judy, "The Mad Hatter," and "Jabberwocky" form a conspiracy to do away with language. Baxter, serving as a guide and commentator, touches upon the mechanism of sound production, the history and development of languages (including nonverbal language), the most recent electronic developments (translating machines, etc.), and the use of language as a tool of communication.

THE ALPHABET CONSPIRACY (II). 30 min. sh,c,ad. color. S.P.—. R.P.Free. Producer: Warner Bros. Distributor: Bell Telephone Co.

A continuation of Part I. The two films should be shown together.

A DEFINITION OF LANGUAGE. 30 min. c,ad. b.w. S.P.$125. R.P.—. Producer: U. of Buffalo. Distributor: NET (Indiana U.). Language and Linguistics Series. III.

Reviews and continues the definition of language as begun in the film "Language and Writing." Explains the relationship between language and culture. Tells whether one language is older, better, or more difficult to learn than is another. Discusses language patterns and how they affect the learning of a language.

DIALECTS. 30 min. c,ad. b.w. S.P.$125. R.P.—. Producer: U. of Buffalo. Distributor: NET (Indiana U.). Language and Linguistics Series. VI.

Explains and demonstrates dialect differences in standard English. Calls upon five guests from different geographical areas in the United States to illustrate pronunciation differences. Shows how language variations are divided into geographical areas.

GRAMMAR: PART I. 30 min. c,ad. b.w. S.P.$125. R.P.—. Producer: U. of Buffalo. Distributor: NET (Indiana U.). Language and Linguistics Series. VII.

Examines the structure, the patterning, and the classification of words. Explains how the linguist defines a word in terms of base, vowels, and stress patterns. Presents examples using nouns, verbs, and pronouns.

GRAMMAR: Part II. 30 min. c,ad. b.w. S.P.$125. R.P.—. Producer: U. of Buffalo. Distributor: NET (Indiana U.). Language and Linguistics Series. VIII.

Continues the discussion of grammar and how words are classified. Explains how adjectives, adverbs, and prepositions are identified by structure rather than by meaning. Examines the structure of phrases and sentences.

HISTORY OF THE ENGLISH LANGUAGE. 30 min. c,ad. b.w. S.P.$125. R.P.—. Producer: U. of Buffalo. Distributor: NET (Indiana U.). Language and Linguistics Series. X.

Investigates the history, the development, and the spread of the English language. Develops a breakdown of Proto-Germanic into its descendant languages. Traces the dialects of England about 600 A.D. Explains how vocabularies change and develop as cultures mingle. Reviews other world languages. Comments on the feasibility of a world language.

HISTORY OF THE INDO-EUROPEAN LANGUAGE FAMILY. 30 min. c,ad. b.w. S.P.$125. R.P.—. Producer: U. of Buffalo. Distributor: NET (Indiana U.). Language and Linguistics Series. IX.

Discusses the history of Indo-European and how different languages are related. Explains how linguistics developed a systematic reconstruction

of Germanic languages. Points out the contributions of Grenini and Verner in developing laws of language development. Stresses predictability and patterning in structure.

INTRODUCTION. 30 min. c,ad. b.w. S.P.$125. R.P.—. Producer: U. of Buffalo. Distributor: NET (Indiana U.). Language and Linguistics Series. I.

Provides an introduction to the series *Language and Linguistics*. Discusses the importance of language. Points out common misconceptions, and tells what language really is. Explains how the words we use and the way we use them affect the way we think. Develops the relationships among language, paralanguage, and kinesics.

LANGUAGE AND MEANING. 30 min. c,ad. b.w. S.P.$125. R.P.—. Producer: U. of Buffalo. Distributor: NET (Indiana U.). Language and Linguistics Series. XIII.

Defines meaning from the linguistic point of view. Explains the part that structure plays in determining meaning from language. Discusses the relationship of paralanguages and kinesics to language and meaning. Shows how linguistic science can be applied to the analysis of the psychiatric interview.

LANGUAGE AND WRITING. 30 min. c,ad. b.w. S.P.$125. R.P.—. Producer: U. of Buffalo. Distributor: NET (Indiana U.). Language and Linguistics Series. II.

Begins a definition of language, discusses the logic of language, and explains misconceptions. Points out that language symbolizes experience and that writing symbolizes language. Shows the relationship between written experience and spoken language, which uses vowels, intonation patterns, and distribution patterns.

THE LINGUISTIC APPROACH TO LANGUAGE LEARNING. 30 min. c,ad. b.w. S.P.$125. R.P.—. Producer: U. of Buffalo. Distributor: NET (Indiana U.). Language and Linguistics Series. IV.

Examines the meaning of "correctness" and the importance of "rules" in grammar. Points out the difference between literary and spoken language. Discusses the four types of stress used in speaking: primary, secondary, tertiary, and weak. Shows how the preceding factors affect the learning of a foreign language.

LINGUISTICS SCIENCE AND THE TEACHING OF READING. 30 min. c,ad. b.w S.P.$125. R.P.—. Producer: U. of Buffalo. Distributor: NET (Indiana U.). Language and Linguistics Series. XII.

Discusses the use of the linguistic approach as a means of improving reading ability. Analyzes the deficiencies and the strong points of the phonic and word methods of teaching reading. Explains the purpose and the nature of reading. Shows examples of patterning in the English spelling system. Suggests structure as the basis for a remedy to the reading problem.

THE SOUNDS OF LANGUAGE. 30 min. c,ad. b.w. S.P.$125. R.P.—. Producer: U. of Buffalo. Distributor: NET (Indiana U.). Language and Linguistics Series. V.

Explains how linguists analyze and classify sounds. Discusses phonetics and phonemics as the science of speech sounds. Shows and demonstrates the organs of speech.

BOOK REVIEWS AND NOTES

MARTIN P. ANDERSEN, *Editor*

English and speech courses on the high school level have traditionally been taught as separate courses with separate texts. In recent years this pattern has been modified. The following review calls attention to an integrated approach to the teaching of speaking, listening, writing, and reading. Persons interested in communication should be aware of this trend.

ENGLISH SKILLS. (Grades 9–12.) By J. N. Hook, Florence C. Guild, and Robert L. Stevens. Boston: Ginn and Company, 1959.
GRADE 9. Pp. xiv + 448. $3.60.
GRADE 10. Pp. xii + 468. $3.68.
GRADE 11. Pp. x + 464. $3.76.
GRADE 12. Pp. xii + 468. $3.92.

This series of high school texts in English has quite evidently been prepared to meet the demands of a course of study oriented toward the four aspects of practical communication: speaking, listening, writing, and reading. Particularly comprehensive is the program for developing oral skills, which begins in the ninth grade text with the more basic skills and providing both review and new materials throughout the course of study for the four years. There is an extensive program for developing both individual speech skills and ability in using group procedures. The ninth and tenth grade texts also give instruction in elementary courtesy and etiquette. Lessons in listening are, for the most part, combined with the lessons in speaking. The program in writing, except for a somewhat surprising set of lessons on the writing of poetry, is practical in emphasis. Each of the texts contains separate chapters designed to improve reading skills.

The materials reflect both traditional and progressive attitudes. The instruction in language is quite traditional. A very substantial part of each text is made up of the usual drill exercises in grammar and usage. Although the text bears a 1959 copyright date, there is slight indication that the authors have considered the newer developments in linguistics, semantics, and standards of usage.

There are also, to be sure, some progressive features. The exercises obviously are designed for immediate social utility. The student receives instruction in how to get along with people and in how to succeed in the world of business and practical affairs. Exercises in elementary critical thinking and problem solving are directed toward helping the student to solve his personal problems.

This series of texts may be of particular interest to teachers of nonacademically oriented students. The exercises are relatively undemanding, the emphasis is on everyday situations, the texts are sturdy, the illustrations reveal the immediately practical orientation of the exercises, the typography is varied and designed to appeal to students who find reading a special effort. Teachers who are seeking a more demanding program of instruction, however, may find several other series more suitable to their needs.

—CHARLES V. HARTUNG

University of California, Los Angeles

In contrast to the unified teaching of communication skills, the following brief review deals with a book which treats oral communication in the traditional manner.

SPEECH FOR ALL. By Lyman M. Fort. (Revised by Edward E. Markert.) (Revised Edition.) New York: Allyn and Bacon, Inc., 1959; pp. x + 287. $3.52.

Speech for All is a revision of an earlier edition written by Lyman M. Fort. The title aptly describes the purpose of this book. It aims to teach every student to speak clearly and fluently in conversation, in informal and formal speech situations, in dramatics, and on the radio and television. It also seeks to have every student speak intelligently by telling him where to get and how to arrange material, what the basic principles of logic are, and how to reason. And, equally important, it teaches the student how to listen intelligently.

The book emphasizes the concept that what a speaker says is as important as how he says it. The subject matter is so arranged that students proceed from simple to formal speeches.

The book is complete and yet brief. It is logically organized. It is written in an interesting style, with the high school student in mind. It is effectively illustrated, both by picture and cartoon.

Every high school speech teacher should look this book over carefully when selecting a text for a high school speech course.

—WALDO PHELPS

University of California, Los Angeles

THE KINESCOPE AND ADULT EDUCATION. By Joffre Dumazedier, assisted by Barbro Sylwan. Paris, France: UNESCO, 1958; pp. 40. $0.75.

Kinescope recordings of television broadcasts are attractive because they cost less than conventional motion-films; but are kinescopes as valuable in adult education as films that have been made with motion-picture cameras? If discussions that take place in a television studio are combined with films in a kinescope and the kinescope is shown through sixteen-millimeter sound motion-picture projectors to adults who meet in schools, civic centers, or cafes, may worth-while educational results ensue?

More than a thousand persons in rural France participated in tests during the winter of 1955-1956. A kinescope portraying rural co-operatives was typical because the technical qualities of its picture and sound were inferior to those of the sixteen-millimeter films of similar content with which the kinescope was being compared. Viewers indicated that no less was learned from the kinescope than from the films; in the kinescope the studio discussions and the film sequences complemented each other well. A conclusion was that, where television stations exist and rural audiences are not widely served by them, the potential economies of showing kinescopes through local motion-picture projection deserve further study.

Researchers of educational communication should have this booklet in their reference libraries.

—KENNETH HARWOOD

University of Southern California

COMMUNICATION IN MANAGEMENT. (Second Edition.) By Charles E. Redfield. Chicago: University of Chicago Press, 1958; pp. xiv + 314. $5.00.

Redfield emphasizes the change in the attitude of business toward com-

munication when he suggests that "Hardly a day passes in modern organizations, large and small alike, without someone identifying and tackling one or another communication problem." It is for these days of communication crises in the world of business administration that the book was written.

Alterations occur in this second edition. These include entirely new chapters on "Employee Publications" and "Communication and Control," a new section on communication in scientific and industrial research, and new material giving the results and the implications of recent communication studies.

Retaining the same intelligible organization of the earlier edition, Part I is an overview of business communication. It presents the basic processes of transmitting messages, suggests types and methods for sending messages, and indicates principles for effective administrative communication. From Part II through the end of the work, the chapter headings usually are effective in focusing the attention of the reader. "Communicating Downward est echelon through subordinates and out to branch offices. In Part III and Outward" denotes administrative routing of information from the high- the author observes messages as moving "upward and inward" from subordinates to the highest executive. Part IV defines "Horizontal Communication" as that communication found on the same level of authority.

A reader will discover that this work is constructed upon the foundation of practicality. This is the correct formula for the pragmatic executive.

As a keystone in the movement of ideas, oral communication slips in importance to second place in the four parts of the book; the emphasis is upon the written medium. The rationale is that verbal orders are suitable for temporary instructions but that a written order is more permanent. But this view does not negate the fact that both management and workers communicate extensively via the oral medium.

The book is at its best in showing how written communication can be fitted into the maze of a mammoth business organization. From executive to lowest subordinate, and back again, communication hurdles are detailed and solutions offered. Examples are numerous and specific, but most problems appear to be purely mechanical instead of semantic. For management to know where in the hierarchy possible fractures occur in the stream of information is significant, but it seems that the author should give more stress to the symbols themselves as possible causes for disruptions in the communication process.

In a university classroom it is relatively simple to theorize as to how communication crises should be resolved; in *Communication in Management* the reader is made vividly aware that some problems are not solved so rapidly.

Physically, the book has one undesirable attribute: the terminal notes are placed at the rear of the book. The selected bibliography at the conclusion of each chapter is particularly useful because a one-sentence capsule summary is given for each work.

The ultimate value of the book is to be found outside the college classroom. On the desk of a business executive it can serve the useful function of answering practical questions for practical men. Whether all the solutions suggested will work in all instances is doubtful, for man must still depend on symbols to convey his meanings.

—Herbert W. Hildebrandt

University of Michigan

GENERAL MODELS OF COMMUNICATION RESEARCH

(Continued from page 26.)

non's general communication system. Writers on communication have found his concepts as useful as his methods of presenting them. The most common modification consists of making some clear place for human behavior in the analysis.

In this article only those models which have contributed to general communication theory have been covered. Models in psychology, sociology, speech, and related areas have been constructed from the research data in each specific field and have their place, but unless we felt a model had general implications, we omitted it.

The 1959-60 decade has been one of many general communication models. In some cases they have served an explanatory function, in others they have summarized, and in still others they are almost a statement of allegiance to a point of view. Whatever the purpose, however, the use of a diagram has nearly superseded the purely verbal presentation of a model.

E T C.

A Review of General Semantics

ETC. doesn't limit itself to technical points of general semantics. The editor, Dr. S. I. Hayakawa, crams each issue of this 128-page quarterly with articles that range over the many ways that men use symbols, and symbols use men.

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A New Irwin Book in Communication

COMMUNICATION: Patterns and Incidents

By WILLIAM V. HANEY, *Northwestern University*

The purpose of this new book is to present to the reader a comprehensive analysis of the communication problems encountered by members of modern society. The treatment makes use of recent findings in psychology, sociology, and particularly, general semantics. The book will help increase the individual's capacity to think, evaluate, and analyze for the betterment of his ability to communicate and to handle interpersonal relations.

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